ENHANCING PATIENT EXPERIENCE: IMPROVING PROCESS EFFICIENCY IN THE OUTPATIENT DEPARTMENT OF S R KALLA MEMORIAL GASTRO AND GENERAL HOSPITAL JAIPUR (RAJASTHAN)

Dissertation Submitted to

The IIHMR University, Jaipur

for the partial fulfilment for the award of the degree of

Master of Business Administration (MBA)

in

Hospital and Health Management

By

Karuna Naruka

Under the Supervision and Guidance of

Dr Goutam Sadhu

2024

S.R. Kalla Memorial
Gastro & General Hospital

Certificate No.
H-2016-0375

Certificate of Completion

This is to certify that **Ms Karuna Naruka** of **IHMR University (HM-27 Batch)** has successfully completed an internship at **SR Kalla Memorial Gastro and General Hospital, Jaipur** from **March 18, 2024 to June 18, 2024**. During this period, she has demonstrated commendable dedication, enthusiasm, and a commitment to learning in the field of **Outpatient Department** in **Operations**

She has actively participated in various tasks and projects assigned, showcasing a strong understanding of medical procedures, protocols, and patient care. Her contributions have been invaluable to our team, and she has consistently exhibited professionalism, integrity, and a willingness to go above and beyond.

Throughout the internship, **Ms Karuna Naruka** has exhibited exceptional communication skills, both in written and verbal forms. She has effectively collaborated with colleagues, patients, and supervisors, fostering a positive and supportive work environment.

It is with great pleasure that we acknowledge **Ms Karuna Naruka** for her outstanding performance and dedication during her internship at SR Kalla Hospital Jaipur. We extend our best wishes for her future endeavours and trust that she will continue to excel in her chosen career path.

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CERTIFICATE

This is to certify that dissertation titled "Enhancing Patient Experience: Improving Process Efficiency in the Outpatient Department of S R Kalla Memorial Gastro and General Hospital Jaipur (RAJASTHAN)" is a record of the research work undertaken by Ms. Karuna Naruka in partial fulfilment of the requirements for the award of the degree of MBA (Hospital and Health Management) from the IIHMR University, Jaipur under my guidance and supervision and her approach to the research study has been sincere, scientific, and analytical.

Faculty Guide
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IIHMR University Jaipur

Date: 6/7/24

DECLARATION BY STUDENT

I hereby declare that this dissertation titled "Enhancing Patient Experience: Improving Process Efficiency in the Outpatient Department of S R Kalla Memorial Gastro and General Hospital Jaipur (RAJASTHAN)" is the bonafide record of my original research work. I declare that it has not been submitted to any other university or institution for the award of any degree or diploma. Information derived from the published or unpublished work of others has been duly acknowledged in the text.

(Signature)

KARUNA NARUKA

Date- 6/7/24

ACKNOWLEDGMENT

I would like to extend our sincere gratitude to everyone who helped make this study on waiting times in OPD. First and foremost, I would like to express our sincere gratitude to the administration of S R KALLA HOSPITAL JAIPUR for approving our request to conduct this research and for giving us with the tools and assistance we needed. I appreciate their dedication to enhancing patient care and their eagerness to look at methods to improve the radiology services provided. I would like to express our gratitude for our supervisor Dr Goutam Sadhu (IIHMR University) and Dr Vinayak Kalla , whose direction and support were extremely helpful in structuring the study. Their insightful comments and helpful ideas significantly improved the research process and findings. I would like to express my gratitude towards S R KALLA HOSPITAL OPD department employees for their cooperation and support during the data gathering phase. Their commitment to patient care and their readiness to take part in this study were essential in obtaining data that could be trusted. We appreciate their dedication to enhancing patient satisfaction and service quality. We owe a debt of gratitude to the patients who kindly contributed their time and experiences to this study by taking part. This research would not have been possible without their assistance. We genuinely value their willingness to contribute to the development OPD knowledge and their dedication to enhancing healthcare services. Finally, I would like to thank all of our friends, family and coworkers for their unflagging support and motivation throughout this research project. Their drive and comprehension were essential in assisting us in overcoming obstacles and maintaining our aims. We once again want to express our sincere gratitude to everyone who contributed to this study. We really appreciate the opportunity to conduct this research and make a contribution to the enhancement of OPD and patient care thanks to your significant efforts and support.

TABLE OF CONTENT

LIST OF FIGURES

ABSTRACT

TITLE- Enhancing Patient Experience: Improving Process Efficiency in the Outpatient Department of S R Kalla Memorial Gastro and General Hospital Jaipur (RAJASTHAN).

INTRODUCTION- Outpatient Department (OPD) congestion and long waiting times are major challenges for hospital administration, impacting patient perceptions and overall satisfaction. The high patient volume, coupled with limited resources, often leads to chaos and long queues. Appointing primary care physicians for initial screenings can reduce congestion. Waiting time, the period a patient waits before seeing medical staff, is a crucial quality indicator, influencing healthcare utilization and patient stress. Factors like appointment types and patient distribution lists contribute to delays. Long patient wait times in an OPD negatively impact the hospital's ability to attract more business in a competitive healthcare industry. Waiting times in the Laboratory and Radiology Departments are significant concerns, affecting timely diagnosis and treatment. Factors such as appointment scheduling, staff availability, and the complexity of procedures contribute to these delays. Waiting time is defined as the period from when a patient arrives for an investigation to when the investigation is completed, and the report is written. Addressing these waiting times through systematic studies and interventions can enhance operational efficiency, improve patient satisfaction, and ensure better healthcare delivery.

OBJECTIVE- What is the average wait time for patients in the OPD, radiology, laboratory and endoscopy department and at which points in the continuum of care do they experience delays during assessments?

FINDINGS- The average waiting time in the OPD is highest for DMK, around 3 hours and 50 minutes, due to high patient load and complex cases. Delays stem from manual registration, early patient arrivals, lengthy billing for credit patients, and emergencies. In the radiology department, primary delays are in investigations (34.28%). While X-ray wait times are mostly under 10 minutes, USG and endoscopy wait times exceed 20 minutes for over half the patients. Report generation delays are significant, with over 10-minute waits for X-rays and USG, and over 20 minutes for endoscopy. Laboratory efficiency is high, with most reports generated within 2 hours, but sample processing occasionally faces delays.

SUGGESTIONS- Recommendations to reduce OPD waiting times include starting billing at 10 AM, implementing self-registration via QR codes, and introducing a token management system for remote queue tracking. Separate IPD billing counters, completing IPD rounds before 11 AM, and installing clear signboards are suggested. On Dr. DMK's RGHS Day will have limited appointments and an additional resident doctor to manage crowds. For radiology, starting the radiologist's shift at 10 AM and coordinating IPD procedures with the floor manager are recommended. Patient preparation posters in regional languages for USG tests will improve efficiency. Encouraging evening visits for locals and providing dedicated help desks are also advised.

KEY WORDS- Consultation TAT, Waiting Time, OPD, and Waiting Time.

ORGANIZATIONAL PROFILE

SR Kalla Memorial Hospital, located in Jaipur, is a NABH accredited, 150-bed Multi Super Specialty General Hospital renowned for providing excellent and affordable healthcare services. Established in 2002, it holds the distinction of being Rajasthan's first Super Specialty Gastro and General Hospital. The hospital is equipped with state-of-the-art technology and offers treatment across various specialties, including Gastroenterology, GI Surgery, Laparoscopic Surgery, Urology, Pathology, Gynecology, Psychiatry, Nephrology, Neurosurgery, Dentistry, Radiology, and Emergency Services.

The hospital's dedicated team of doctors, healthcare consultants, and trained medical staff are committed to delivering effective and efficient medical services. The infrastructure includes modern operation theatres, a Cardiac Cath Lab, Intensive Care Units (ICU and Liver ICU), and advanced diagnostic facilities such as the Video Endoscopy System, Pediatric Capsule Endoscopy System, and a 24-hour automated and computerized Path Lab. SR Kalla Memorial Hospital prioritizes innovation, consistently integrating the latest technology and advanced treatment techniques to provide top-notch healthcare services accessible to all.

Specialties:

SR Kalla Memorial Hospital caters to all major specialties with state-of-the-art equipment and support facilities. Key specialties include:

- Gastroenterology
- GI Surgery
- Laparoscopic Surgery
- Urology
- Pathology
- Radio Diagnosis/Radiology

- Gynecology

- Psychiatry

- Nephrology

- Neurology

- Neurosurgery

- Emergency Services

Advanced Facilities:

- Video Endoscopy System

- Pediatric Endoscopy System

- Capsule Endoscopy System

- Endoscopic Ultrasound System (EUS)

- Dedicated Liver ICU

- Advanced Operation Theatres equipped with C-Arm, Harmonic Scalpel

- Ultra Cardiac Cath Lab (Siemens - Artis Zee plus flat panel)

- 24-hour Advanced Automated & Computerized Path Lab

- 24-hour Spiral CT scan, Haemo Peritoneal Dialysis

- Interventional Radiography

- Minimal Invasive Surgery Department

- Histopathology with Picture Reporting

- Round-the-clock Emergency Services

CHAPTER 1: INTRODUCTION

1.1 STUDY BACKGROUND

Outpatient Department (OPD) congestion and long waiting times present significant challenges for hospital administration. The OPD serves as the gateway to hospital services, forming patients' first impressions of the facility. A positive initial experience in the OPD can enhance patients' overall perception of the hospital, making it essential to ensure excellent service in this area (1).The large volume of patients, combined with limited manpower and resources, often leads to chaos, congestion, long queues, and the risk of mismanagement. Appointing primary care physicians for patient screening has been shown to reduce congestion and waiting times (2).Waiting time, defined as the duration a patient spends in the clinic before being seen by medical staff, is a critical indicator of the quality of hospital services. It significantly influences healthcare utilization, as long waits are often perceived as barriers to accessing care. These delays can cause stress for both patients and doctors. Patients frequently judge healthcare personnel based on waiting time, sometimes valuing it more than the providers' knowledge and skills (3).The primary factors contributing to prolonged waiting times include appointment type, ticket numbering, doctors arriving late, patients arriving early, and patient distribution lists (4). To manage OPD services effectively, it is crucial to conduct an in-depth study. Implementing a simple time and motion study with cost-effective interventions can significantly improve the efficiency and quality of hospital services (1).Hospital Outpatient Department (OPD) services provide medical care to patients who do not require overnight admission. These services focus on diagnosing, managing, and treating various medical conditions. Typical OPD services include:

Consultations: Patients can visit the OPD to consult with various medical specialists, including gastroenterologist, cardiologist, general physician, psychologist, general surgeon etc. These professionals assess patient health, provide diagnoses, prescribe medications, and recommend further tests or treatments if necessary.

Diagnostic Tests: Many hospitals' OPDs are equipped with specialized diagnostic facilities where patients can undergo various tests. These include blood tests, urine tests,

electrocardiograms (ECGs) and imaging studies such as X-rays, ultrasounds and CT scans. These tests aid in diagnosing and monitoring numerous medical conditions.

Procedures: Some minor procedures can be performed in the OPD without requiring hospital admission. Examples include endoscopy, colonoscopy, ERCP, POEM etc in gastro hospital.

OPDs also focus on preventive healthcare by offering immunizations, screenings, and physical examinations. They promote healthy lifestyles, provide counselling, and suggest ways to prevent diseases.

Follow-up Appointments: Patients who have undergone surgery or been previously admitted may need follow-up appointments in the OPD to check their progress, remove stitches, change dressings, or adjust medications. These appointments are typically scheduled in the OPD.

Similarly, in the Laboratory and Radiology Department, waiting time is a significant concern. Delays in obtaining radiological services can impede timely diagnosis and treatment, thereby affecting patient outcomes. Factors such as appointment scheduling, availability of lab and radiology staff, and the complexity of diagnostic procedures contribute to waiting times in this department. Waiting time in laboratory and radiology could be defined as the time between when a patient is present at the radiology department for an investigation, and the time the investigation is done, and a report written on the outcome of the investigation . Addressing waiting times in both the OPD laboratory and Radiology Department through systematic studies and interventions can enhance operational efficiency, improve patient satisfaction, and ensure better healthcare delivery.

1.2 SCOPE OF STUDY

Reducing Waiting Time: Long waiting times in the OPD , radiology, laboratory and endoscopy department are a common complaint and negatively impact patient satisfaction. Improving the operational efficiency of departments and organizations can help reduce waiting times.

Enhancing Operational Efficiency: Analysing waiting times helps pinpoint operational bottlenecks and inefficiencies. Healthcare providers can streamline workflows, optimize scheduling, and improve resource utilization, resulting in more timely and effective service delivery.

1.3 REASEACH QUESTION

1. What is the average wait time for patients in the OPD, radiology, laboratory and endoscopy department and at which points in the continuum of care do they experience delays during assessments?

1.4 OBJECTIVES

1. To identify average waiting time in the OPD , radiology, laboratory and endoscopy department.
2. To identify the primary reasons contributing to prolonged waiting times in the OPD , radiology, laboratory and endoscopy department.
3. To identify solutions for reducing long waiting times.

1.5 PROCESS FLOW IN OPD

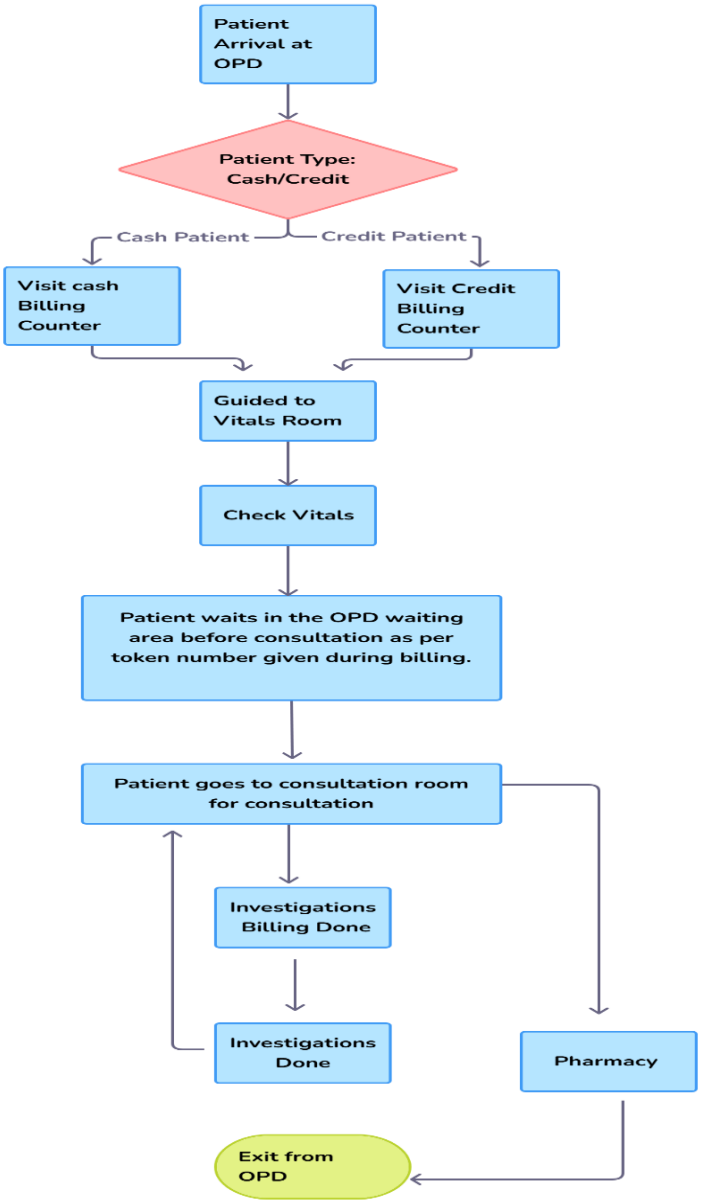

FIG 1.5.1 PROCESS FLOW IN OPD

The OPD for gastroenterology, cardiology, urology etc is in the basement.

- Cash patients arrive at the billing and registration counter on the ground floor. After completing the billing process, they are directed to the vitals capturing room for checks such as blood pressure, weight, height, and temperature in basement.

- Registration is done in physical registration form.

- Credit patients follow a similar process, and their billing is done on the ground floor at the credit billing counters. Once billed, they proceed to the basement for vitals checks.

- Patients wait in the OPD waiting area until it is their turn for consultation.

- When it is time for the consultation, patients go to the consultation room, and the ward lady checks them in.

- After the consultation, the ward lady checks the patient out.

- If necessary, patients proceed to pharmacy billing or investigations.

- Finally, patients exit the OPD.

1.6 PROCESS FLOW IN LABORATORY

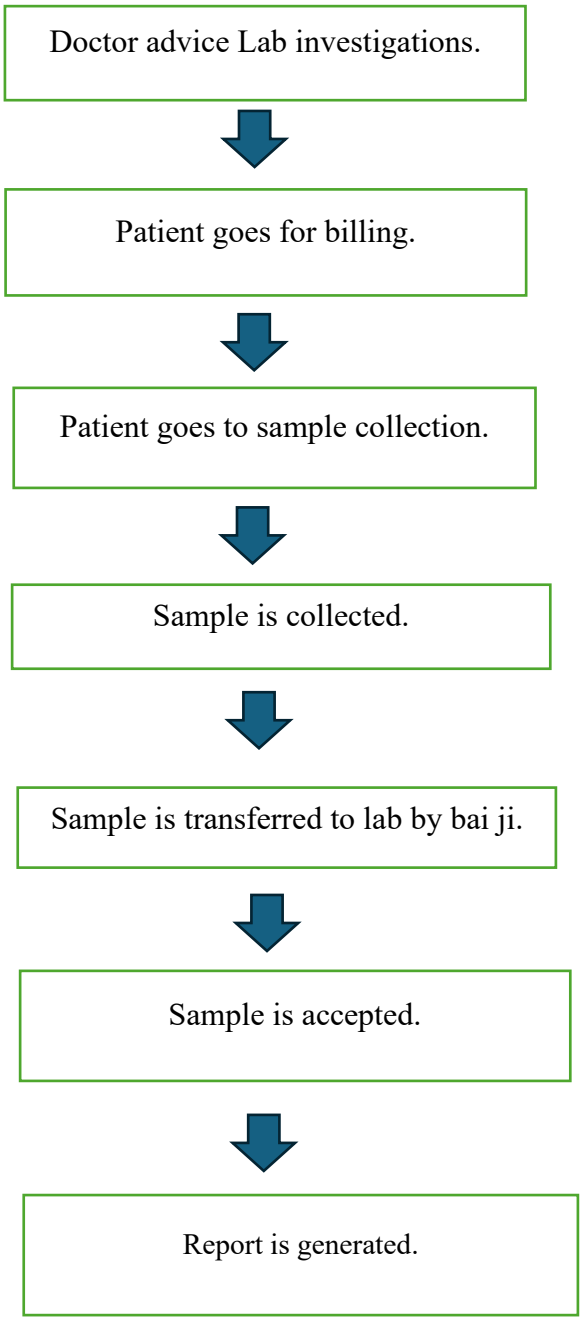

FIG 1.5.2 PROCESS FLOW IN LABORATORY

1.7 PROCESS FLOW IN X RAY/USG ENDOSCOPY

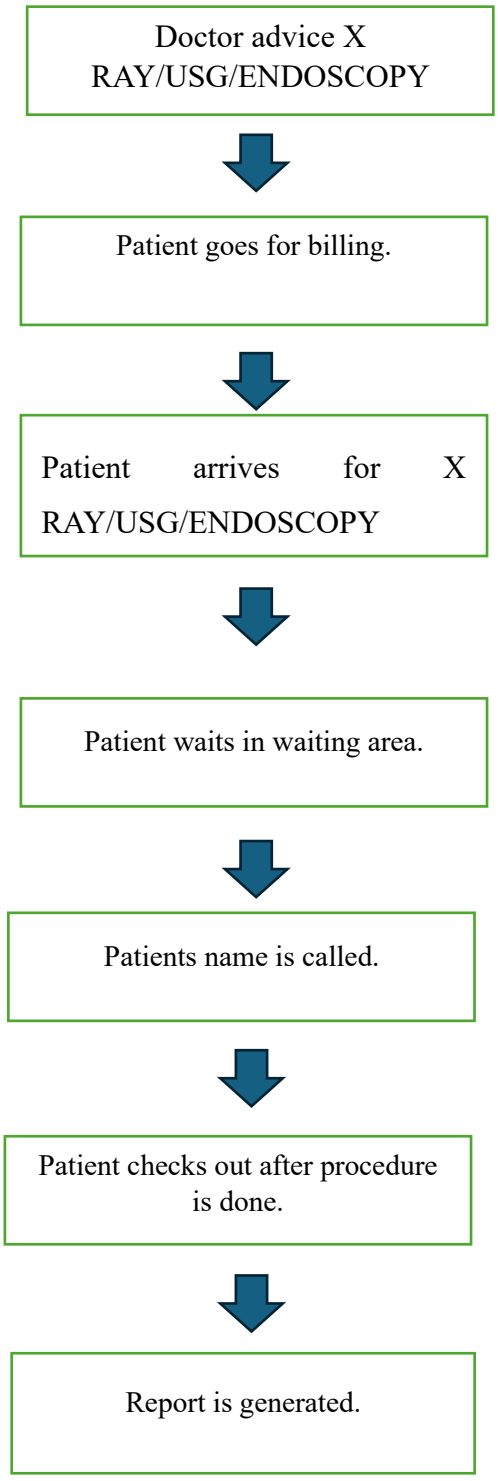

FIG 1.5.3 PROCESS FLOW IN X RAY/USG/ENDOSCOPY

1.8. REPORT GENERATION PROCESS

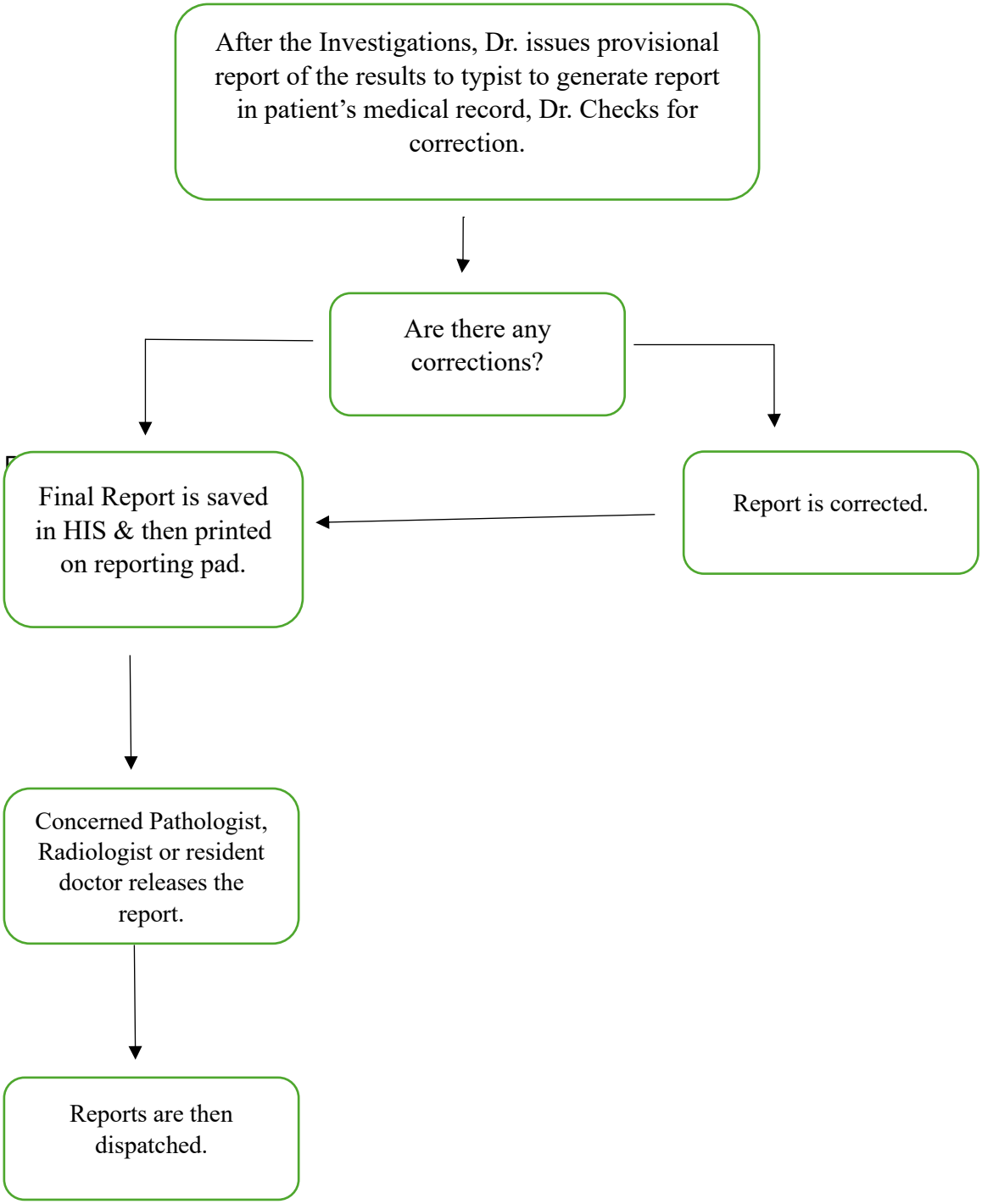

FIG 1.5.4 REPORT GENERATION PROCESS

CHAPTER-2 REVIEW OF LITRATURE

1. A Time Motion Study of Healthcare Delivery System at General OPD of Rural Hospital of West Bengal, a study by Sengupta B, Kumar Mandal P, Kar A, Bhattacharyya N, Biswas S, Resident J 2020 highlights OPD congestion and long waiting times are major challenges in hospitals, impacting patient impressions and care quality. This study at Domjur Rural Hospital highlighted the need for efficient management and more resources to handle increased patient loads effectively.
2. Javed D. A time-motion study of OPD services at a state level Ayurvedic hospital to reduce the OPD congestion. Int Ayurvedic Med J. 2015 Ayurvedic hospital management, detailed in ancient texts like Charak Samhita and Sushruta Samhita, is as crucial as in modern hospitals. OPD congestion, significantly impacting patient satisfaction, remains a challenging issue. Studies show that appointing primary care physicians, adopting Six Sigma approaches, and minor improvements can reduce waiting times. This study focuses on using time and motion studies to enhance OPD efficiency in an Ayurvedic hospital.
3. "A study on waiting time and out-patient satisfaction at Gujarat medical education research society hospital, Valsad, Gujarat, India" by Patel R, Patel HR 2017 highlights the importance of efficient OPD services as they shape patient impressions and satisfaction, with 8-10% of OPD patients needing hospitalization. Long waiting times, a key indicator of service quality, cause stress and impact healthcare utilization. A cross-sectional study at GMERS Hospital-Valsad assessed patient satisfaction and waiting times in OPDs and diagnostic departments.
4. Saxena R, Sharma S, Sharda V, Nalini G, Yadav MK. A study of waiting time of patients in outpatient department of armed forces Tertiary Hospital in Northern India. The Journal of Community Health Management. 2023 Jan 20 , a study was conducted to assess our healthcare system within the existing infrastructure by determining waiting times in various departments such as OPD, laboratory, and radiodiagnosis. The Neuro OPD was selected due to its complexity in patient diagnosis and extended patient time spent. Laboratories and radiodiagnosis departments are commonly associated with high levels of patient dissatisfaction.

5. Assessment of Waiting Time and Recommend the Strategies for Reduction of Waiting Time in Outpatient Department at AVBRH, Wardha, India 2021 explained prolonged waiting periods in outpatient services lead to public health issues, weakened access to care, and patient dissatisfaction. Studies show high waiting times globally, influenced by appointment systems, staffing, and management practices. Effective strategies to reduce waiting times include optimizing resource allocation, improving management processes, and incorporating volunteer assistance. Reducing waiting periods enhances patient satisfaction, healthcare quality, and hospital efficiency. Addressing these issues is crucial for providing timely and effective healthcare.
6. Radiography plays a crucial role in modern medicine, providing diagnostic services for nearly every patient. A study in Owerri, Imo State, Nigeria, 2017 assessed factors affecting waiting times in radiology departments using a cross-sectional survey of over 150 participants, including radiographers and patients. The findings indicated that patient waiting times were influenced by staff lateness, high patient volumes, lack of personnel, faulty equipment, and restrictions on radiographers. These waiting times significantly impacted patient satisfaction, with mixed levels of contentment observed.
7. According to a study conducted by Radha Thapa, Sunita Saldanha, Niloufer Bucker, and P. Rishith titled "Assessment of Patient Waiting Time and Consultation at a Selected Tertiary Care Teaching Hospital," *2023* certain areas requiring attention within the hospital's operations surfaced. The primary cause of delay was attributed to unforeseen faculty leaves, disorganized files, and the tardiness in transferring old files from the Medical Records Department (MRD) to Outpatient Department (OPD). The study, employing a descriptive design, was conducted at Yenepoya Medical College Hospital in Mangalore, Karnataka, spanning a duration of three months.
8. The study aimed to assess patient satisfaction by Muhondwa EP, Leshabari MT, Mwangu M, Mbembati N, Ezekiel MJ in 2008 at MN hospital in Dar Es Salaam, Tanzania, focusing on the treatment and services offered by the outpatient department (OPD) before significant reforms. Exit interviews were used to evaluate satisfaction. The findings highlighted the importance of waiting times

and staff behaviour for OPD patients, with patients expressing concerns about staff shortages, unprofessional conduct, and extended waiting times. They also reported feeling services were provided slowly, leading to extended hospital stays and long consultation wait times.

9. The study by Naaz, Farah and Mohammed, Idris 2019 …… analyzed the average waiting time in the Outpatient Department (OPD) at AYUSH Hospital in India. It found that patients typically spend around two hours in the OPD, with consultations accounting for one hour and ten minutes, and pharmacy visits accounting for nearly 16 minutes. The average doctor consultation duration is only three minutes.
10. Raghada Al Khani's 2015 study aimed to improve waiting time and patient experience in a medical retina clinic by enhancing patient flow pathways and services capacity. The project was conducted due to high demand, and the HSE change model managed the project process. The project had significant impacts on the organization, and recommendations are being considered.
11. Kim E, Kim S, Song M, Kim S, Yoo D, Hwang H, Yoo S. Discovery of outpatient care process of a tertiary university hospital using process mining. Healthcare informatics research. 2013 utilized it for stroke patient pathways and gynecological oncology processes, while Rebuge and Ferreira analyzed hospital emergency services. Yang and Hwang focused on identifying fraudulent healthcare cases. Our study applied process mining to outpatient care, demonstrating its utility amidst diverse systems. Unlike prior research, we compared machine-driven with expert-driven process models, revealing differences in hospital practices. Process mining, reliant on time-stamped log data, enables resource reassignment based on frequent patterns and bottleneck analysis. Future work includes analyzing outpatient processes per practitioner to optimize staff allocation, fostering real process enhancements in hospital outpatient care.
12. Dr (Brig) Anil Pandit, Er Lalit Varma, and Dr. Amruta P conducted a study in August 2016, titled "IMPACT OF OPD WAITING TIME ON PATIENT SATISFACTION," using a descriptive and exploratory approach. The study found that patients spent an average of 60 minutes in the OPD, with the consultation wait time accounting for 40 minutes on average. The data from the survey

indicated that 33% of patients waited between 30 and 60 minutes to see the doctor, while 32% waited for more than an hour.

13. In their study titled "Patients Feedback Analysis to Improve Quality of Care - A Tertiary Care Centre Study," Dake Rajesh, I.V. Ramana, and Ramesh.CH analysed 6,829 patient feedback. Results showed that only 4.6% constituted complaints (315), while 27.8% were compliments (1,894) and 1.3% were suggestions (88). Remarkably, 94.09% of patients expressed overall satisfaction with the hospital. The study emphasizes the need for healthcare providers to balance scientific expertise with compassionate care. Regular feedback analysis can pinpoint areas for improvement, leading to tailored training and evaluation programs at the department level. Addressing specific concerns identified in feedback can significantly enhance patient satisfaction and overall care quality.
14. Patient Satisfaction among OPD Attendees at a Secondary Care Hospital in Northern India, Ravneet Kaur, Shashi Kant, Akhil Dhanesh Goel, and Nitika Sharma 2022 emphasize the importance of patient satisfaction in assessing healthcare quality. The majority of participants rated outpatient department (OPD) services as "good" or "very good," consistent with findings from other studies. Unlike previous research highlighting dissatisfaction with public facilities like toilets and drinking water, this study reported higher satisfaction, possibly due to regular cleaning. Consultation time with doctors received positive ratings, underscoring effective communication's significance. However, poor ratings for waiting time at the registration counter suggest the need for streamlining processes and increasing waiting space. Moreover, inadequate behavior and attitude of other hospital staff signal the necessity for reorientation training to enhance communication skills and improve the overall patient experience.
15. Determinants of hospital waiting time for outpatient care in India utilizing models 1-3 2018, reveals shorter waiting times for older patients, possibly indicating improved elderly care. Malayalee ethnicity correlates with reduced waiting times, potentially due to socioeconomic factors. Profit proprietary hospitals show shorter waits, contrasting with longer waits in government and non-profit hospitals. Ambulance arrivals correlate with shorter waits, suggesting prioritized care for serious cases. Males experience shorter waits, possibly due to cultural biases.

Policy implications include addressing ethnic and gender disparities, enhancing access in non-profit hospitals, and improving emergency care in government facilities. Actions may involve equalizing access across ethnicities, addressing gender discrimination, and enhancing emergency medical services in government facilities.

16. Nupur verma,Matheus Zanon,Bruno Hochhegger, 2020 Brazil 208516 Stratified Showcased variation between generalised & specialised reporting, thereby reducing reporting TAT.
17. Christoph Stern,Thomas Boehm,Burkhardt Seifert, Nadine Kawel-Boehm ,2018 Switzerland 100 Random it stated that changing the workflow of radiology department to specific from general can reduce waiting times & increase productivity.
18. Akintunde o akintomide, ofonime N ukmeh Samuel A efanga 2019 Nigeria 318 Stratified Stress was laid down to schedule appointments in duraton of half an hour to reduce waiting time in USG.
19. Whitney L Jackson,2015 Ohio 86 Random Emphasis was laid down to increase radiologists' performance by implementing more training to decrease overall TAT and increase efficiency, productivity.
20. Vaibhavi Shah, Yeshwant R Chillakuru,2022, USA 15117 Stratified Emphasis was given to implement a digital algorithm model in order predict delay In Tat & to find factors leading to it British Columbia All patients during the study period Stratified.
21. Jalal s , ante z,Ouellette h, peters s,munk p,2020 British Columbia All patients during the study period Stratified Emphasis was given to have radiologist appointed on round the clock all week radiologist to decrease TAT.
22. Hitti ea, el-eid,gr tamim h et al,2017 Lebanon 49000 Random Study emphasized to adopt lean change management measures to improve transportation to reduce overall TAT.
23. Anuradha chndramohan a, viswajit krothapalli a ,ann augustin,2023 India 92 Stratified Emphasis was given to introduce Teleradiograph to improve efficiency to greater extent.

CHAPTER-3 RESEARCH METHODLOGY

SETTING: S R Kalla Memorial Gastro and General Hospital Jaipur (RAJASTHAN).

STUDY POPULATION: Patients visiting Gastroenterology OPD, laboratory, Endoscopy and radiology.

Inclusion Criteria- All patients visiting OPD, laboratory, endoscopy and radiology in OPD between 8 am to 5 pm.

Exclusion Criteria- IP patients, Emergency patients, critically ill patients, pregnant women.

DURATION OF STUDY: 20th March 2024 to 18th June 2024.

SAMPLE SIZE: 105 patients visiting OPD consultation, 50 patients visiting X ray, 50 patients visiting USG, 50 patients visiting Endoscopy, 50 patients visiting laboratory.

DATA COLLECTION: Direct and Primary Data collection.

DATA COLLECTION PROCEDURE: Direct observation and department-wise appointment list (Global Soft software). This project uses routinely collected data from Gastroenterology department of S R Kalla Memorial Gastro and General Hospital Jaipur (RAJASTHAN).

Study Design: Observational cross sectional descriptive study.

Study Tools- Primary data collection is done by direct observation of in time and out time (patient coming out of the consultation room, radiology, lab and endoscopy). Data analysis is done by MS Excel.

CHAPTER-4 OBSERVATIONS/ RESULTS

Average waiting time at Billing counter

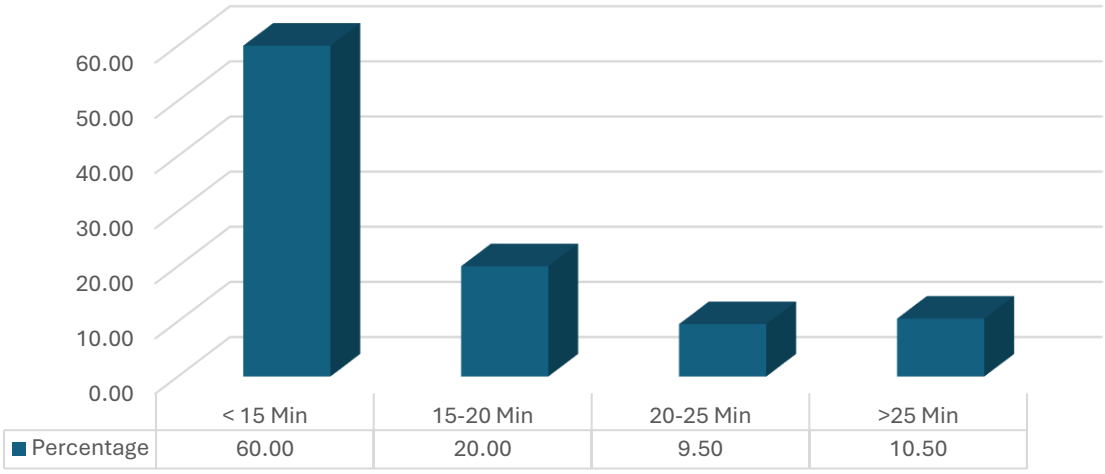

FIG 4.1. Average waiting time at Billing counter

Figure 4.1 depict that most (60%) of patients experience a waiting time of less than 15 minutes. Whereas 20% of the patients wait between 15 to 20 minutes, while around 10% of patients have to wait for 20 to 25 minutes. The remaining 10% waits for more than 25 minutes. This data suggests that the billing process is generally efficient, with most patients being served quickly, although there is room for improvement to minimize longer waiting times. It was noted that Registration of new patients is done though manual registration, which is time taking process.

Average Waiting time for Consultation

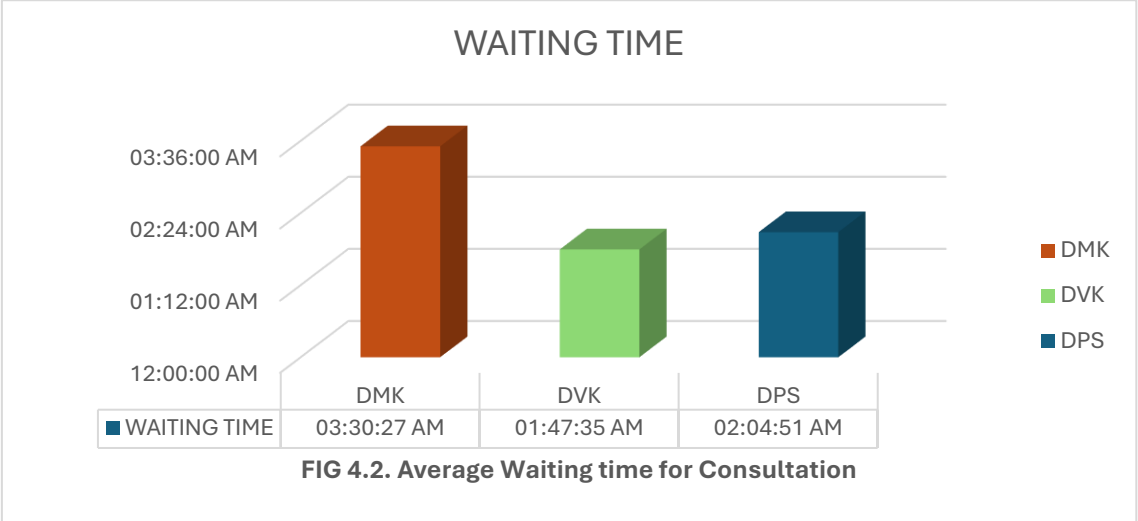

FIG 4.2. Average Waiting time for Consultation

Figure 4.2 depict displays the average waiting times for consultations at three different Doctors : DMK, DVK, and DPS. DMK has the longest average waiting time at 3 hours, 30 minutes, and 27 seconds. DVK has a significantly shorter average waiting time of 1 hour, 47 minutes, and 35 seconds. DPS falls in between with an average waiting time of 2 hours, 4 minutes, and 51 seconds.

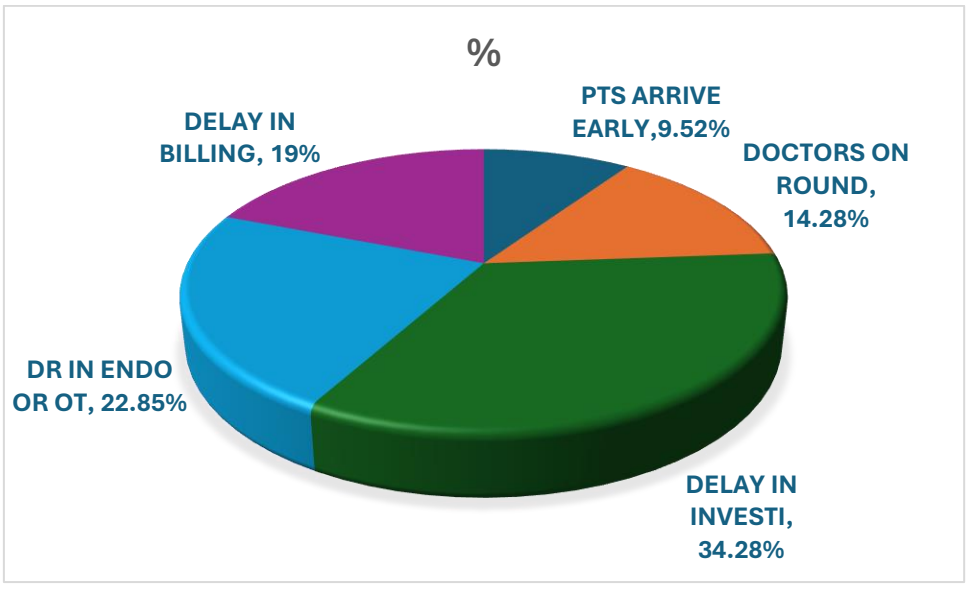

FIG 4.3. REASONS FOR DELAY

The pie chart in Figure 4.3 highlights the primary reasons for delays in the OPD. The largest contributor is "DELAY IN INVESTI" (34.28%), indicating that prolonged investigation processes are a significant bottleneck. Following this, "DR IN ENDO OR OT" accounts for 22.85% of delays, suggesting that doctors being engaged in endoscopy, or operating theaters is another major factor. "DELAY IN BILLING" represents 19%, indicating inefficiencies in the billing process. "DOCTORS ON ROUND" and "PTS ARRIVE EARLY" contribute 14.28% and 9.52%, respectively. Addressing these issues could significantly improve patient flow and reduce waiting times in the OPD.

Average Waiting Time of X-ray

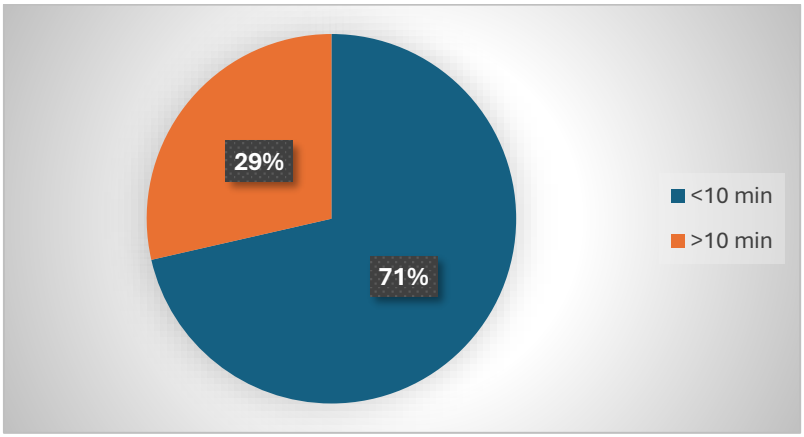

FIG 4.4. Average Waiting Time of X-ray

The pie chart in Figure 4.4 highlights the majority of patients (71%) experience a waiting time of less than 10 minutes for X-rays, indicating efficient service.

Average Waiting Time for report generation in X-ray

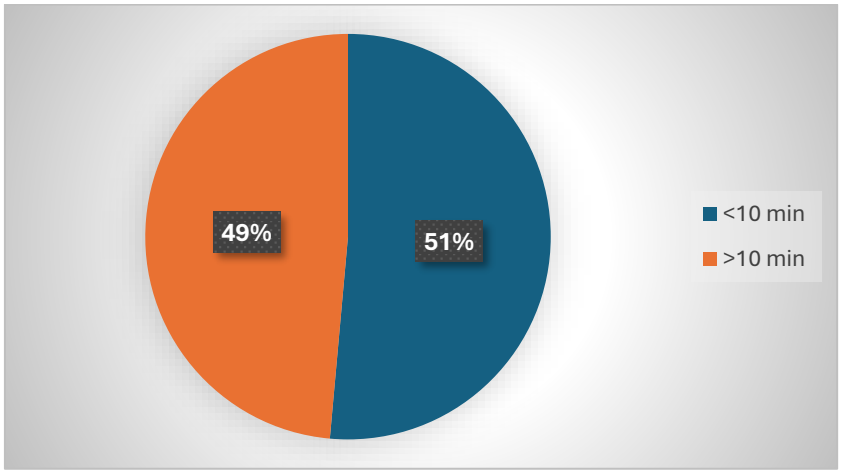

FIG 4.5. Average Waiting Time for report generation in X-ray

The pie chart in Figure 4.5 indicates that the average waiting time for X-ray report generation is almost evenly split: 51% of patients receive their reports in less than 10 minutes, while 49% wait over 10 minutes. This balance suggests that while half of the reports are generated quickly, there's still significant room for improvement to reduce delays for the other half.

Average Waiting Time of USG

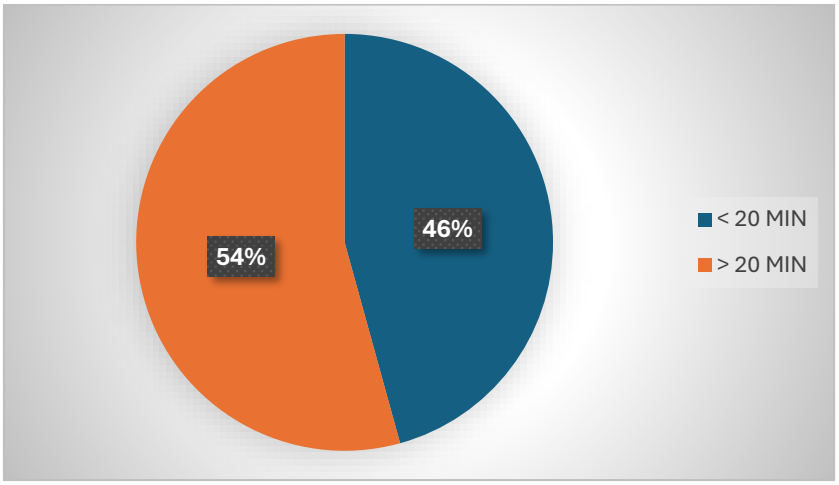

FIG 4.6. Average Waiting Time of USG

The pie chart in Figure 4.6 shows that the average waiting time for a USG is relatively balanced, with 46% of patients waiting less than 20 minutes and 54% waiting more than 20 minutes. This indicates a need to reduce waiting times for over half of the patients to improve overall service efficiency.

Average Waiting Time for report generation in USG

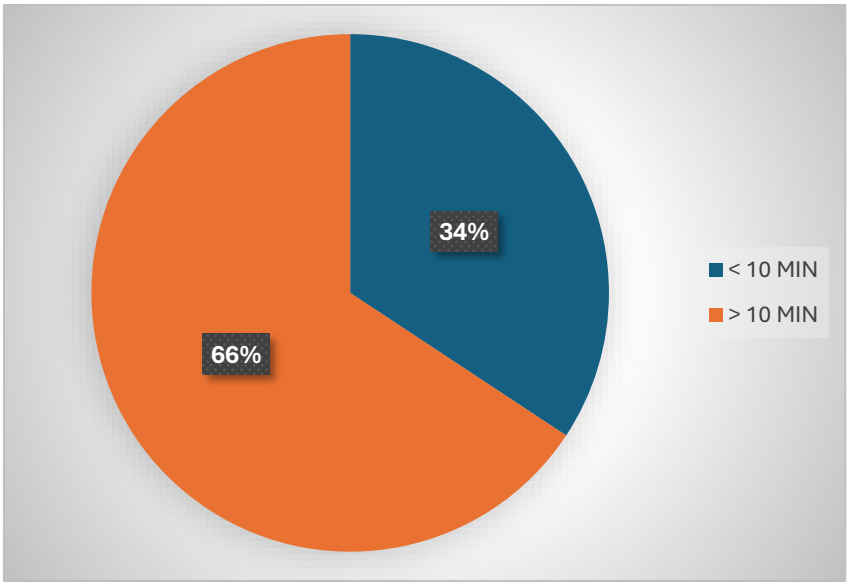

FIG 4.7. Average Waiting Time for report generation in USG

The pie chart in Figure 4.7 indicates a disparity in the report generation times for USG, with 34% of patients receiving their reports in less than 10 minutes, while 66% wait over 10 minutes.

Average Waiting Time of Endoscopy

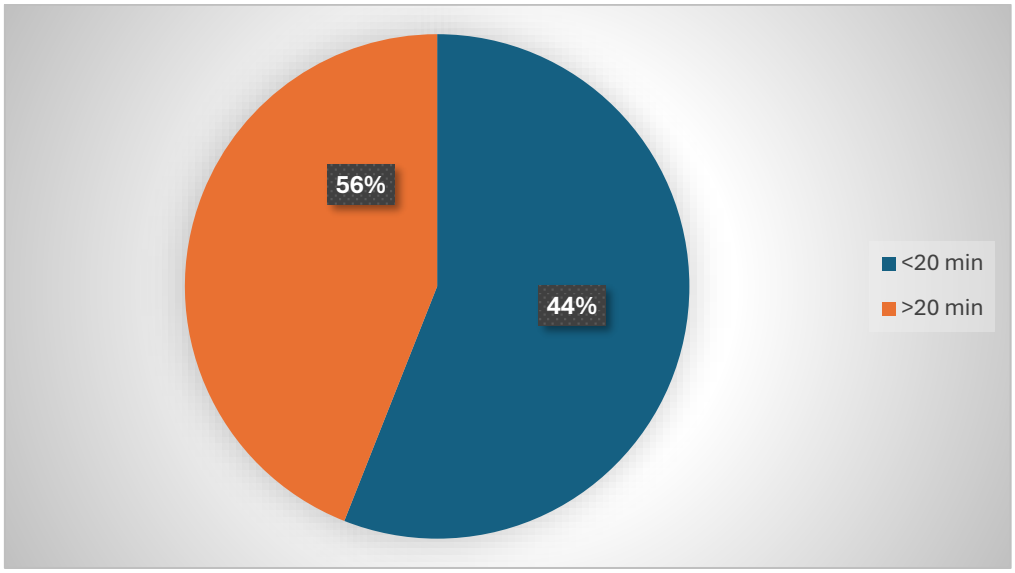

FIG 4.8. Average Waiting Time of Endoscopy

FIG 4.8.indicates a relatively balanced average waiting time for an endoscopy, with 56% of patients waiting more than 20 minutes and 44% waiting less than 20 minutes.

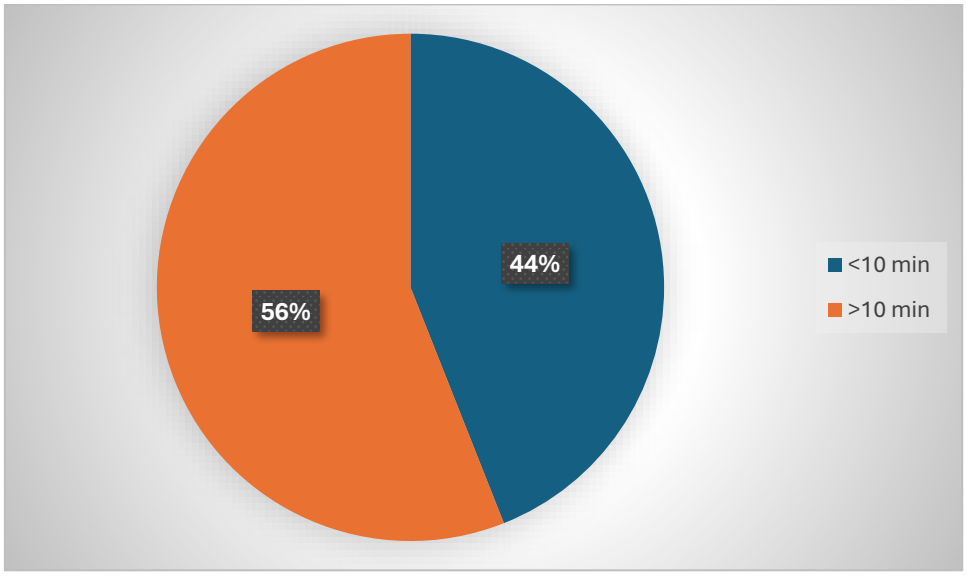

FIG 4.9. Average Waiting Time for report generation in Endoscopy

The pie chart in Figure 4.9 shows that the average waiting time for an Endoscopy is relatively balanced, with 44 %of patients waiting less than 20 minutes and 56% waiting more than 20 minutes.

AVERAGE TIME BETWEEN SRT AND SAT (LABORATORY)

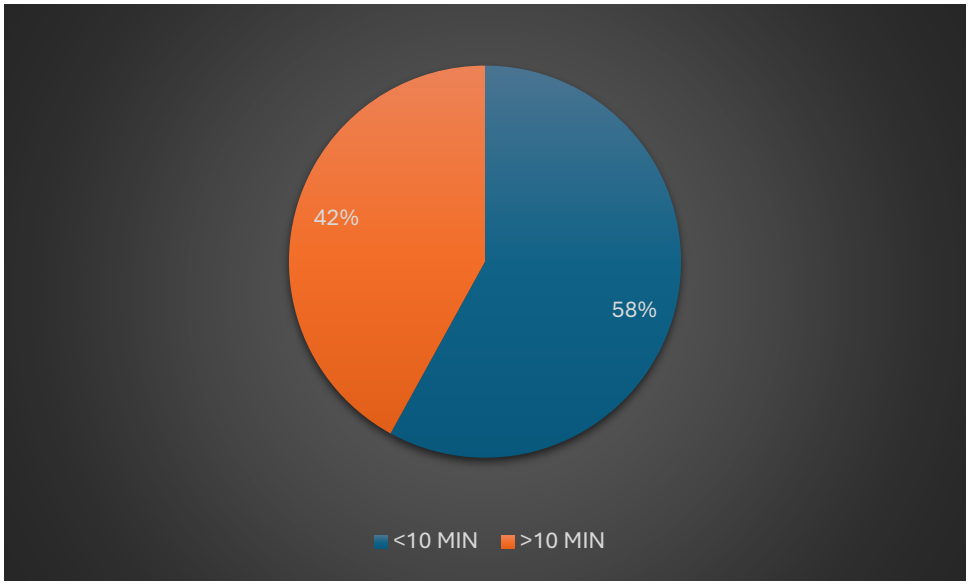

FIG 4.10. **AVERAGE TIME BETWEEN SRT AND SAT**

AVERAGE TIME BETWEEN SAT AND RGT (LABORATORY)

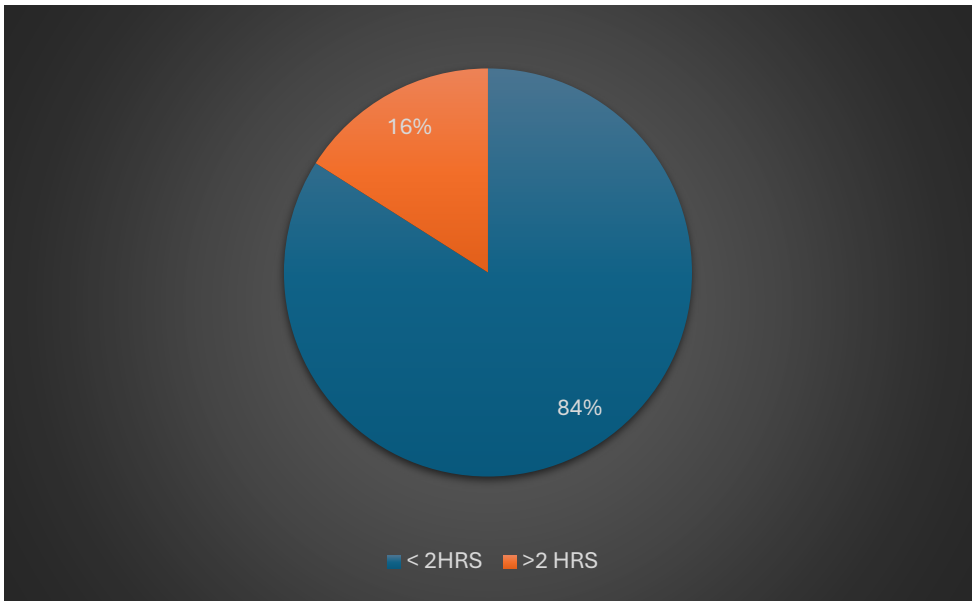

FIG 4.11. **AVERAGE TIME BETWEEN SAT AND RGT**

CHAPTER-5 MAJOR FINDINGS

Average waiting time in the OPD

- The TAT for DMK is the highest among the three doctors, with an average time of around 3 hours and 50 minutes.
- This suggests that patients of DMK experience longer waiting and processing times due to high patient load, complex cases.
- Billing starts at 8:00 am.
- OPD timings are 11:00 am to 02:00pm. And 04:00 to 06:00pm
- As we can conclude the reasons behind the long waiting time are -

1. Delays at the registration desk majorly due to manual registration.
2. Some patients arrive too early for OPD consultation even before the doctor comes which leads to long waiting time.
3. Credit patients have lengthy process of billing.
4. Lack of staff for credit counter.
5. IPD billing is also done on OPD billing counter only.
6. Improper signages.
7. Some patients are not present at the moment when their names are announced for consultation which leads to long waiting time.
8. Doctors sometimes have to attend emergency cases and have to go for the endoscopic procedures in emergency.
9. As there are no definite timings of IPD rounds, it leads to long waiting time.
10. Unavailability of healthcare assistants to assist and guide patients effectively.

Average waiting time in the X ray, USG, Endoscopy

- As shown in Figure 4.3, primary reasons for delays in the OPD is "DELAY IN INVESTIGATION (34.28%), indicating that prolonged investigation processes are a significant bottleneck.
- Investigations like laboratory. X ray, USG and endoscopy are studied in this study.

- From FIG 4.4 and FIG 4.5, it is concluded that a majority of patients (71%) experience a waiting time of less than 10 minutes, so the process is streamlined but still there is scope for improvement in X ray.
- Figure 4.6 shows that 54% waiting more than 20 minutes in USG.
- FIG 4.8**.**indicates 56% of patients waiting more than 20 minutes in endoscopy.
- As we can conclude the reasons behind the long waiting time are –

1. Radiologist comes at 11 AM when OPD also starts results in overlapping among OPD, ICU and IPD Patients.
2. IPD rounds get finished by between 10:30 AM to 11:30 AM, resulting overlapping among OPD, IPD, ICU patients from the morning only.
3. IPD patients also come for the imaging in the department, so the IPD patients has to be prioritized before the OPD patients and counsel them regarding the same.
4. Poor management due to the inadequate handling of a sizable number of OPD patients by personnel, especially during peak hours, because the radiology department was overloaded.
5. Patients are not prepared for investigation like despite being told to have proper urine pressure by staff, reasonable no of patients have improper urine pressure that makes them ineligible for test
6. Emergency and Priority patients also come.
7. Patients were unavailable at their time of call. Poor coordination and communication between departments.
8. System issue.

Average Waiting Time for report generation in X ray, USG, Endoscopy

- Figure 4.5 indicates that 49% of patients wait over 10 minutes to get their reports.
- Figure 4.7 indicates a disparity in the report generation times for USG, with 34% of patients receiving their reports in less than 10 minutes, while 66% wait over 10 minutes.
- There was a single radiologist responsible for validating reports for USG, CT, and X-ray, and only one typist handling reports typing for both OPD and IPD patients. Consequently, the validation and dispatch process took more time.

- Figure 4.9 shows that 56% of patients wait more than 20 minutes. This delay is primarily due to the high workload from OPD, daycare and IPD patients, causing resident doctors to take longer to prepare reports in endoscopy.

AVERAGE TIME BETWEEN SRT (SAMPLE RECEIVING TIME) AND SAT (LABORATORY)

- In 42% of patients, the time between sample receiving (SRT) and sample accepting (SAT) is more than 10 minutes, indicating a generally smooth process. However, delays occur occasionally because BAI ji is responsible for transporting samples to the lab.

AVERAGE TIME BETWEEN SAT (SAMPLE ACCEPTING TIME) AND RGT (REPORT GENERATION TIME)

- 84% of samples have report generation times under 2 hours, indicating efficient processing. However, 16% exceed 2 hours, highlighting areas for potential improvement in laboratory efficiency.

CHAPTER 6- DISCUSSION

Batching patient records can lead to extended wait times, causing patient confusion and crowding, which further increases individual wait times. Given the setup of patient flow records, the shift plan must consider the high volume expected during morning hours. Staffing levels reflect this, with personnel overworked in the mornings but largely idle in the afternoons (2010, Wagner et al.). Long lines may also result from flow issues, such as service point delays caused by computer malfunctions or occasional manual processes. The study found that complaints about delays due to long lines were most frequent during billing, waiting, and examination times. Even when staff was available, patients were often delayed at registration and other service points due to system malfunctions or staffing shortages.

The process can be tedious, requiring patients to wait for ultrasound and X-ray exams. To ensure a smooth, efficient, and timely flow of activities, the department should redesign

patient flow multiple times. Ineffective flow design may also contribute to long lines due to back-and-forth motions. Implementing a radiological dashboard linked to a HIMS will reduce congestion by adhering to a first-come, first-served principle and aligning processes with QMS. Additionally, patients typically experience longer wait times at service locations due to a lack of staff.

The Turnaround Time (TAT) for Dr. DMK is notably the highest among the three doctors, averaging around 3 hours and 50 minutes. This indicates that patients of Dr DMK experience longer waiting and processing times due to a high patient load and the complexity of cases. Billing currently starts at 8:00 AM, while OPD hours are from 11:00 AM to 2:00 PM and 4:00 PM to 6:00 PM. Several factors contribute to the extended waiting times: manual registration processes, patients arriving too early, lengthy billing procedures for credit patients, insufficient staff at the credit counter, overlapping IPD billing at the OPD billing counter, inadequate signage, patient absenteeism when called, emergency cases requiring doctor attention, and the absence of definite timings for IPD rounds. Additionally, the unavailability of healthcare assistants to guide patients effectively exacerbates the issue.

Figure 4.3 highlights that delays in investigations, accounting for 34.28% of the overall delays, are a significant bottleneck. While 71% of patients experience less than a 10-minute wait for X-rays, the processes for USG and endoscopy are less efficient, with 54% and 56% of patients waiting over 20 minutes, respectively. Key reasons include the radiologist starting at 11 AM, IPD rounds overlapping with OPD, ICU, and IPD patient investigations, and poor management during peak hours. Additionally, patient preparation issues, emergency cases, poor interdepartmental communication, and system issues further delay the process.

Report generation times also exhibit disparities, with 49% of patients waiting over 10 minutes for X-ray reports and 66% of USG patients experiencing similar delays. This is primarily due to a single radiologist validating all reports and limited typist availability. In endoscopy, 56% of patients wait more than 20 minutes due to the high workload from OPD, daycare, and IPD patients.

For laboratory tests, 42% of patients experience a time between sample receiving and sample acceptance of more than 10 minutes. Although 84% of samples have report generation times under 2 hours, 16% exceed this, suggesting areas for improvement.

To reduce waiting times in the OPD, billing should start at 10 AM instead of 8 AM, aligning with the 11 AM OPD start. Implementing self-registration through QR codes, a token management system, separate IPD billing counters, and clear signage can further streamline the process. Completing IPD rounds before 11 AM, having a dedicated help desk, and emphasizing appointments can also help. For X-ray, USG, and endoscopy, having the radiologist start at 10 AM, facilitating evening workups for local patients, ensuring seamless coordination, and improving patient preparation communication are recommended. These measures, combined with appropriate staffing and efficient workflow management, can significantly reduce waiting times and improve patient satisfaction.

CHAPER-7 : CONCLUSION AND RECOMMENDATIONS

Average waiting time in the OPD

Here are some recommendations to reduce and improve the waiting time in the Outpatient Department (OPD):

1. Billing should commence at 10 AM instead of 8 AM since the OPD starts at 11 AM. This adjustment will reduce patient waiting time, as they will not have to wait until 11 AM for services.
2. Self-registration through QR code, provided with a staff for assistance.
3. Token management system can be introduced through which patients can issue their token from home and see the status of queue and can come just before their token number which will save their time.
4. Separate IPD billing counter.

5. IPD rounds should be completed before 11 am, so that OPD can be commenced on time.
6. Dedicated help desk for patient guidance.
7. A simple token display system with audio / sound notification with queue/ token number on audio device or display screen to inform patients about their turn.
8. Emphasize to patients the impotence of making appointment to reduce their waiting time.
9. Encourage local patients of Jaipur to visit in the evening to save time.
10. Install clear and appropriate signboards for various OPD departments to assist patients in navigating and reaching the correct department without wasting time.
11. Dr DMK has Thursday as RGHS Day. To manage the crowd effectively and streamline the OPD flow, bookings for RGHS patients are limited to 50 appointments on this day.
12. On Thursdays, in addition to Dr DMK, a resident doctor is also available to see OPD patients to help manage the crowd.

Average waiting time in the X ray, USG, Endoscopy

1. Radiologist should come at 10 AM instead of 11 AM to manage IPD and ICU patients before OPD starts.
2. Facilitate evening basic workup of local patients who come in evening in OPD and USG for these patients, followed by endoscopy the next day 10 AM.
3. Collect the list of IPD procedures from IPD floor manager and ensure seamless coordination in radiology and endoscopy.
4. Collaborate with the IPD floor manager to ensure early bowel preparation for IPD patients.
5. Stick a poster outside USG dept in regional & national language regarding all aspects of p/t preparation for USG tests, because it has been observed that p/t enquires about how much water he has to intake for test,
6. Not only will it reduce the workload of staff to tell almost every p/t that how much water he has to intake, but also it will make easier for staff to take p/t for test easily and without delay.

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ANNEXURE 1

Date Added	Token	User Name	WAITING TIME	Call Time	Finish Time	VALUABLE Time	TAT	BILLING TIME	REASONS
2024-05-27 08:19:15	DMK	Kirosta YADAV	03:49:09	2024-05-27 12:00:30	2024-05-27 12:08:24	0:07:54	03:57:03	<15 MIN	PTS ARRIVE EARLY
2024-05-27 09:04:44	DMK	SUMAN DEVI	03:27:17	2024-05-27 12:23:15	2024-05-27 12:32:01	0:08:46	03:36:03	<15 MIN	DOCTORS ON ROUND
2024-05-27 09:54:22	DMK	Rekha sharma	02:57:29	2024-05-27 12:36:15	2024-05-27 12:51:51	0:15:36	03:13:05	<15 MIN	DOCTORS ON ROUND
2024-05-27 10:47:09	DMK	SITA RAM	02:38:05	2024-05-27 13:19:00	2024-05-27 13:25:14	0:06:14	02:44:19	<15 MIN	DOCTORS ON ROUND
2024-05-27 11:34:06	DMK	BABITA KALA	01:58:32	2024-05-27 13:25:29	2024-05-27 13:32:38	0:07:09	02:05:41	<15 MIN	DOCTORS ON ROUND
2024-05-28 08:42:32	DMK	Gajendra Singh	03:30:46	2024-05-28 12:00:01	2024-05-28 12:13:18	0:13:17	03:44:03	<15 MIN	DOCTORS ON ROUND
2024-05-28 08:50:40	DMK	Asha Trakroo	03:35:30	2024-05-28 12:19:18	2024-05-28 12:26:10	0:06:52	03:42:22	<15 MIN	DOCTORS ON ROUND
2024-05-28 09:02:57	DMK	Santosh Singh	03:36:00	2024-05-28 12:29:31	2024-05-28 12:38:57	0:09:26	03:45:26	<15 MIN	DELAY IN INVESTI
2024-05-28 09:29:33	DMK	Meenakshi	03:22:23	2024-05-28 12:42:49	2024-05-28 12:51:56	0:09:07	03:31:30	<15 MIN	DELAY IN INVESTI

CHECKLIST FOR CONSULTATION

ANNEXURE 2

S NO	PIT NAME	PT ARRIVAL	CHECK IN	WT	CHECK OUT	VALUABLE TIME	REPORT GENERATION	REPORT TAT	TAT
1	Patient1	12:56:00 PM	12:58:00 PM	00:02:00	1:16:00 PM	00:09:00	1:25:00 PM	00:17:00	00:29:00
2	Patient2	1:52:00 PM	1:55:00 PM	00:03:00	2:25:00 PM	00:09:00	2:34:00 PM	00:04:00	00:42:00
3	Patient3	4:22:00 PM	4:30:00 PM	00:08:00	4:47:00 PM	00:14:00	5:01:00 PM	00:06:00	00:39:00
4	Patient4	1:57:00 PM	1:58:00 PM	00:01:00	2:17:00 PM	00:11:00	2:28:00 PM	00:03:00	00:31:00
5	Patient5	4:52:00 PM	4:55:00 PM	00:03:00	5:09:00 PM	00:20:00	5:29:00 PM	00:03:00	00:37:00
6	Patient6	1:31:00 PM	1:34:00 PM	00:03:00	1:58:00 PM	00:10:00	2:08:00 PM	00:09:00	00:37:00
7	Patient7	4:54:00 PM	5:01:00 PM	00:07:00	5:24:00 PM	00:09:00	5:33:00 PM	00:18:00	00:39:00
8	Patient8	4:48:00 PM	4:55:00 PM	00:07:00	5:24:00 PM	00:19:00	5:43:00 PM	00:18:00	00:55:00
9	Patient9	12:56:00 PM	12:58:00 PM	00:02:00	1:16:00 PM	00:09:00	1:25:00 PM	00:17:00	00:29:00
10	Patient10	5:40:00 PM	5:47:00 PM	00:07:00	6:14:00 PM	00:18:00	6:32:00 PM	00:01:00	00:52:00

CHECKLIST FOR X RAY, USG AND ENDOSCOPY

ANNEXURE 3

PT Name	Recpt /Bed	S.R.T.		S.A.T		R.G.T.	Time
PRAHALAD YADAV	OB003229-24	4-30-2024 11:01:22 AM	00:13:13	4-30-2024 11:14:35 AM	00:53:50	4-30-2024 12:08:26 PM	01:07
MAHESH CHAND	OB003228-24	4-30-2024 11:04:10 AM	00:10:25	4-30-2024 11:14:35 AM	01:09:07	4-30-2024 12:23:42 PM	01:19
RADHEY SHYAM GUPTA	OB003231-24	4-30-2024 11:09:11 AM	00:05:25	4-30-2024 11:14:35 AM	01:24:07	4-30-2024 12:38:42 PM	01:29
RADHEY SHYAM GUPTA	OB003231-24	4-30-2024 11:09:11 AM	00:05:25	4-30-2024 11:14:35 AM	01:09:52	4-30-2024 12:24:27 PM	01:15
PUSHPENDRA SINGH	OB003240-24	4-30-2024 11:19:37 AM	00:08:35	4-30-2024 11:28:12 AM	00:45:50	4-30-2024 12:14:02 PM	00:54

CHECKLIST FOR LABORATORY